

[54] **HAMMER FORGING DIE**
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[52] **U.S. Cl.** **72/481**
[51] **Int. Cl.²** **B21D 37/04**
[58] **Field of Search** 72/481, 482, 470, 476

[57] **ABSTRACT**

The dowel is made integral with the shank of the die.

[56] **References Cited**
UNITED STATES PATENTS
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6 Claims, 4 Drawing Figures

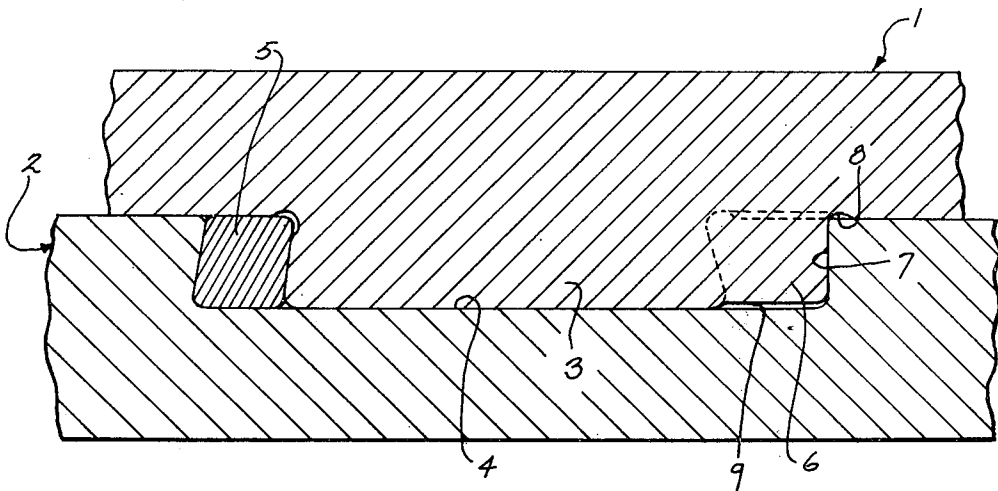


Fig. 1

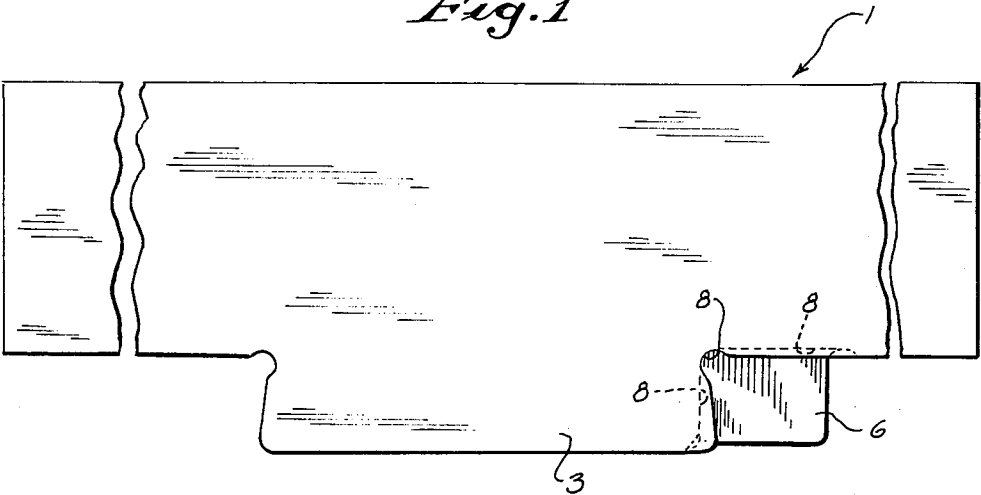


Fig. 2

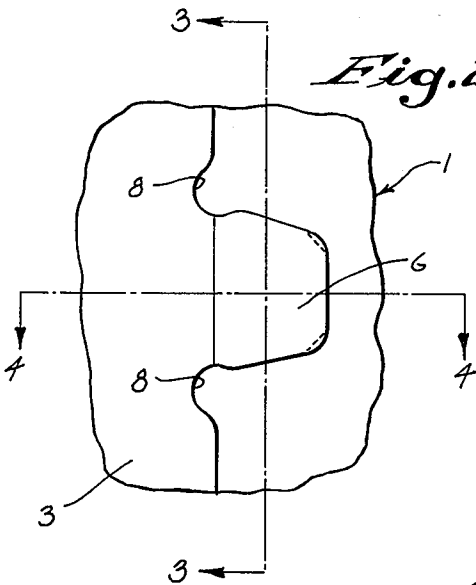


Fig. 3

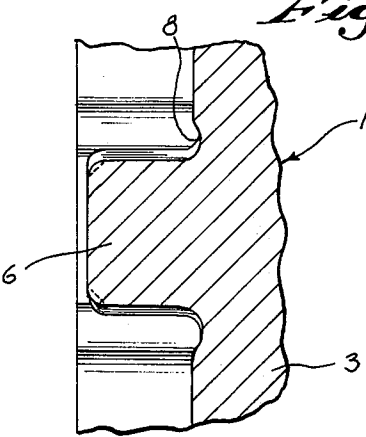
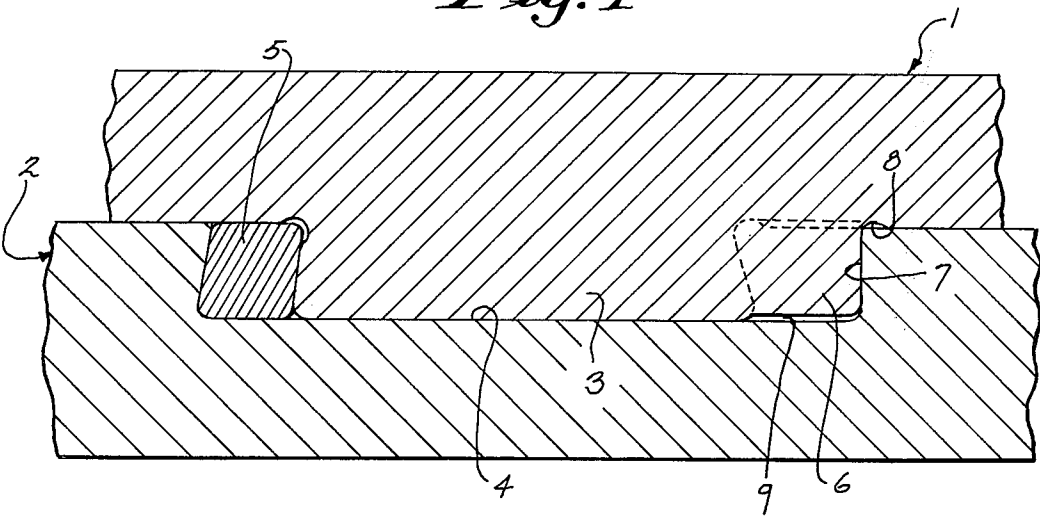


Fig. 4



HAMMER FORGING DIE**BACKGROUND OF THE INVENTION**

This invention relates to a hammer forging die generally having a shank which is wedged into a recess in the top of the sow block.

Heretofore die shanks have been machined in planers to provide the desired flared edges for dovetail securement in the recess of the sow block. This required a separate dowel between the die shank and the sow block and which had to have a drive fit of the dowel into the shank, causing stresses which often produced cracks in the die shank and shortened the life of the die.

SUMMARY OF THE INVENTION

In carrying out the present invention the die shank is cut by a rotary milling tool which contour mills the shank to the ram and sow block recess and forms an integral dowel extending laterally from the shank and which remains otherwise integral with the under surface of the die.

The recess in the sow block for receiving the dowel is contour milled to the dimensions of the dowel, or in the event the recess is milled first the dowel may be contour milled from it, having regard for certain predetermined areas of relief at the corners.

BRIEF DESCRIPTION OF THE DRAWING

The accompanying drawing illustrates the best mode presently contemplated for carrying out the invention.

In the drawing:

FIG. 1 is a front elevational view of a die block;

FIG. 2 is a bottom view of a portion of the block of FIG. 1 showing the integral dowel;

FIG. 3 is a detail section taken on line 3—3 of FIG. 2; and

FIG. 4 is a section taken on line 4—4 of FIG. 2 showing the die block assembled with a sow block.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing, the die block 1 is normally mounted upon the sow block or other support 2, as shown in FIG. 4.

The die block 1 has a central shank 3 machined from its lower surface and normally extending from front to back of the block.

The sow block 2 has a recess 4 machined in its upper surface and normally extending from front to back of the block, to receive the shank 3 of the die block when the latter rests upon the sow block.

The side edges of shank 3 and of recess 4 are machined on a dovetail slant to provide for interlocking the same at one side and for securing the shank in the recess by a wedge 5 at the other side, the recess being wider than the shank to accommodate the wedge.

The wedge 5 may be very slightly tapered and is

driven in either from the front or back.

The die block 1 is interlocked with the sow block 2 by a dowel 6 to prevent relative movement between the two blocks in the general direction from front to rear or vice versa.

In the embodiment illustrated, and according to the invention, the dowel 6 is machined from the underside of die block 1 and is integral therewith and with shank 3.

This is accomplished by first machining recess 4 in a planer, then milling a dowel recess 7 in the upper surface of the sow block and extending from the slanting edge of recess 4 to a suitable depth for receiving dowel 6.

The shank 3 and dowel 6 are then contour milled from the recesses 4 and 7, respectively.

In order to avoid stress concentrations at all corners, suitable relief areas 8 are provided in the milling of both the dowel 6 and recess 7.

Additionally, the lower surface of the dowel is machined away for a suitable depth to prevent the dowel from engaging the flat bottom surface of recess 7 in the sow block. The space 9, thus provided, is shown in FIG. 4. Thus the thickness of dowel 6 is less than that of shank 3 in order to avoid loading of the dowel with the vertical hammer forces.

It has been found that construction illustrated substantially overcomes all tendencies for cracks to develop in the die shank and/or the sow block.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A hammer forging die block having a shank extending across its underside, and comprising a dowel integral with said shank and the underside of said block.

2. The combination of the die block of claim 1 and a sow block having a recess across its upper surface for receiving said shank, and a dowel recess extending laterally from said first named recess and generally complementary to said dowel.

3. The construction of claim 2 and relief areas disposed at all corners between said dowel and the surfaces of said complimentary recess to substantially prevent undue stress concentration in either the die block or the sow block.

4. The construction of claim 2 in which said dowel is of less thickness than said shank to avoid loading of said dowel with the vertical hammer forces.

5. The die block of claim 1 in which said integral dowel is of less thickness than said shank.

6. The die block of claim 2 in which the shank and integral dowel thereof are contour milled.

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